

Blue colour of the ventral body part of Eastern Slow Worm *Anguis colchica* (Nordmann, 1840)

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Blue or clearly visible colour of various parts of the body is observed at various species of reptiles. This coloration is often associated with sexual dimorphism expressing only seasonally during reproduction, after which the specific colour diminishes or disappears completely (for example in the case of *Lacerta viridis* or *Ameiva auberi*). Such coloration is hormonally determined and can often bring along an increased risk of an attack from predators (Capula et al., 1997; Pietersen, 2007). In this report we present the first observation of blue coloration of ventral body part in the Slow Worm species *Anguis colchica* (Nordmann, 1840).

The Slow Worms (*Anguis fragilis* s. l.) form a group of phylogenetically closely related species of legless lizards commonly occurring in most of Europe and adjacent parts of Western Asia (Gvoždík et al., 2010). Slow Worm specimens with blue dorsal spotting have been found in almost the whole Europe. The frequency of such spotting, however, decreases from eastern to western parts of Europe. Therefore, it is very rare to encounter this colour aberration in *A. fragilis* (s.s.) Linnaeus, 1758, distributed, based on the up-to-date knowledge, in Western Europe. On the other hand, blue dorsal spotting is more common in populations of the Slow Worms inhabiting Eastern Europe, assigning to the species *A. colchica* (the former subspecies *Anguis fragilis colchica*; Lác, 1967; Voipio, 1968; Kminiak, 1992). For instance, a study of eight populations from mountain regions of the north-eastern Italy, highlighted very rare frequency of this coloration; only 0,8% of individuals (n=744) shared blue dorsal spots (Capula et

al., 1997). All specimens with such specific coloration were adult (one subadult) males. Frequency of this finding was neither correlated with the type of habitat nor with latitude and altitude, but was positively correlated with longitude. Therefore, such specimens, mostly older males, with more or less blue dorsal spotting, can be found predominantly in Eastern Europe, approximately eastward from the eastern border of the Czech Republic. This border correlates with the edge of the range of *Anguis colchica* (Kminiak, 1992; Gvoždík et al., 2010) distributed in Lithuania, north-eastern Poland, eastern Czech Republic, Slovakia and Romania.

The described specimen was an adult male (SVL ca 400 mm) identified as *Anguis colchica incerta* Krynicky, 1837 (Fig. 3). The individual was found during a cross prospecting on a sunny and warm day of 7th June 2009 in the logging sector covered with branches and dead foliage. Location of the finding was a south-heading hill (49°38' N, 18°39' E, 400 m a.s.l.) in the village of Oldřichovice in the NE Czech Republic (Fig. 1). This locality borders with the western edge of the distribution range of *Anguis colchica*. Found specimen of *Anguis colchica* was at first sight coloured typically for *Anguis fragilis* s.l. Its dorsal body part was auburn and across the middle of his body it had a tenuous brown dual link.

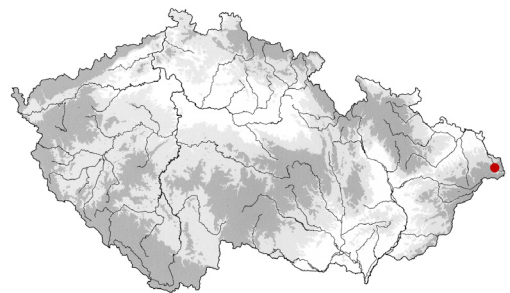


Figure 1. The map of the Czech Republic showing the site where specimen of the Slow Worm with blue ventral body part was observed (red point).

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Figure 2. Blue colour of ventral body part of the male *A. c. incerta*. Photograph: P. Meduna



Figure 3. View to dorsal parts of the identical specimen. Photograph: P. Meduna

Its lateral body part was also dark brown. Only after catching and handling with the specimen by the author, in order to take detailed photographs, it was noticed, took note of and photographically documented distinct blue colour of ventral body part starting from the head and ending at the apex of its tail. This ventral blue colour almost precisely copied the ventral and subcaudal scales and gently overlapped to the dorsal scales (Fig. 2).

Typical coloration of *Anguis fragilis* s.l. is brown, bronze, chocolate, grayish or yellowish and coloration of the ventral body parts tends to be monochrome slate, black or even black-gray with a distinct, but narrow strip, that is common especially for male specimens (Kminiak, 1992). Blue ventral coloration is not known from the literature. Hence this is the first described finding of the specimen with completely blue colour of the ventral body parts at species complex *Anguis fragilis* s.l.

From the literature is, however, known a case of findings of a Slow Worm with almost blue coloration of the dorsal parts from Bílé Karpaty Mts., Slovakia (Filípek, 2005).

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References

- Capula, M., Luiselli, L., Capanna, E. (1997): The blue-spotted morph of the slow worm, *Anguis fragilis*: Colour polymorphism and predation risks. *Ital. J. Zool.* **64**: 147-153.
- Filípek, M. (2005): Neobvykle sfarbený slepých lámavý. *ŽIVA*. **1**: 36. [Unusually coloured of Slow Worm - in Slovak].
- Gvoždík, V., Jandzik, D., Lymberakis, P., Jablonski, D., Moravec, J. (2010): Slow worm, *Anguis fragilis* (Reptilia: Anguidae) as a species complex: Genetic structure reveals deep divergences. *Mol. Phylogenet. Evol.* **55**(2): 460-472.
- Kminiak, M., (1992): *Anguis fragilis* Linnaeus, 1758. In: Baruš, V., Oliva, O. (Eds.), *Fauna of Czechoslovakia*, vol. 26, Reptiles – Reptilia. Academia, Praha, pp. 101–106. [In Czech with English Abstract].
- Lác, J., (1967). To the systematics of the slow worm (*Anguis fragilis* L.) and its distribution in Slovakia. *Biológia* (Bratislava) **22**: 908–921. [In Slovak with German and Russian Abstracts].
- Pietersen, D. (2007): Possible stress-related colour changes in fossorial reptile species. *African Herp News*. **43**: 2-10.
- Voipio P. (1968): Den bläckfärgiga formen av kopparodla samt fynden av denna i Skandinavien. *Fauna Flora*. **63**: 103-109. [With English summary].